

CLAIMS

What is claimed is:

1 1. A method comprising:
2 storing a number of sets of static data across more than one memory unit of at
3 least two memory units; and
4 storing a number of sets of dynamic data within a single memory unit, such that a
5 processing unit can read the set of static data from any of the at least two memory units.

1 2. The method of claim 1, wherein the number of sets of the static data includes a
2 forwarding table for data transmission of data packets across a network.

1 3. The method of claim 1, wherein the number of sets of dynamic data includes data
2 packets to be processed by a processing unit within a network element.

1 4. The method of claim 3, wherein a first data packet of the data packets is stored
2 across more than one of the number of sets of dynamic data.

1 5. The method of claim 4, further comprising storing a pointer to a first set of
2 dynamic data of the number of sets of dynamic data that represent the first data packet.

1 6. The method of claim 1, wherein storing the set of static data across more than one
2 memory unit of the at least two memory units includes storing the set of static data across
3 each of the at least two memory units.

1 7. A method comprising:

2 storing a set of data across more than one of at least two memory units upon
3 determining that the number of sets of data is static; and
4 storing the set of data within a single memory unit of the at least two memory
5 units upon determining that the set of data is dynamic.

1 8. The method of claim 7, wherein the set of data that is static includes a forwarding
2 table for data transmission of data packets across a network.

1 9. The method of claim 7, wherein the set of data that is dynamic includes data
2 packets to be processed by a processing unit within a network element.

1 10. The method of claim 7, wherein storing the set of data across more than one of at
2 least two memory units upon determining that the number of sets of data is static includes
3 storing the set of data that is static across each of the at least two memory units.

1 11. A method of accessing a set of data from a number of memory units, the method
2 comprising:

3 reading the set of data from a single memory unit from the number of memory
4 units, upon determining that the set of data is dynamic; and
5 reading the set of data from any of the number of memory units, upon
6 determining that the set of data is static.

1 12. The method of claim 11, wherein the set of data that is static includes a
2 forwarding table for data transmission of data packets across a network.

1 13. The method of claim 11, wherein the set of data that is dynamic includes data
2 packets to be processed by a processing unit within a network element.

1 14. A method of reading a set of data from a number of memory units, the method
2 comprising:

3 reading the set of data from a single memory unit from the number of memory
4 units, upon determining that the set of data is dynamic;

5 upon determining that the set of data is static, performing the following:

6 reading the set of data from a first memory unit from the number of
7 memory units, upon determining that the first memory unit is accessible;

8 reading the set of data from a second memory unit from the number of
9 memory units, upon determining that the first memory unit is not accessible and
10 the second memory unit is accessible;

11 reading the set of data from a third memory unit from the number of
12 memory units, upon determining that the first memory unit and the second
13 memory unit are not accessible and the third memory unit is accessible; and

14 reading the set of data from a fourth memory unit from the number of
15 memory units, upon determining that the first memory unit, the second memory
16 unit and the third memory unit are not accessible and the fourth memory unit is
17 accessible.

1 15. The method of claim 14, wherein the set of data that is static includes a
2 forwarding table for data transmission of data packets across a network.

1 16. The method of claim 14, wherein the set of data that is dynamic includes data
2 packets to be processed by a processing unit within a network element.

1 17. An apparatus comprising:

2 a first memory unit to store a set of static data and a first set of dynamic data;

3 a second memory unit coupled to the first memory unit, the second memory unit
4 to store the set of static data and a second set of dynamic data;

5 a first processing unit coupled to the first and second memory units, wherein the
6 first processing unit can read the set of static data from the first memory unit or the
7 second memory unit; and

8 a second processing unit coupled to the first and second memory units and the
9 first processing unit, wherein the second processing unit can read the set of static data
10 from the first memory unit or the second memory unit.

1 18. The apparatus of claim 17, wherein the static data includes a forwarding table for
2 data transmission of data packets across a network.

1 19. The apparatus of claim 17, wherein the dynamic data includes data packets to be
2 transmitted across a network.

1 20. The network element of claim 19, wherein the first processing unit and the second
2 processing unit include a packet descriptor cache, the packet descriptor cache to include
3 pointers to a first portion of the data packets stored in the first and second memory units.

1 21. A network element for switching data packets across a network, the network
2 element comprising:

3 a number of line cards, each line card comprising:

4 a first memory unit to store an Internet Protocol (IP) address table and a
5 first number of portions of the data packets;

6 a second memory unit coupled to the first memory unit, the second
7 memory unit to store the IP address table and a second number of portions of the data
8 packets;

9 a first processing unit coupled to the first and second memory units,
10 wherein the first processing unit can read the IP address table from the first memory unit
11 or the second memory unit; and
12 a second processing unit coupled to the first and second memory units and
13 the first processing unit, wherein the second processing unit can read the IP address table
14 from the first memory unit or the second memory unit; and
15 a control card coupled to the number of line cards, wherein the control card can
16 update the IP address table.

1 22. The network element of claim 21, wherein the first processing unit and the second
2 processing unit include a packet descriptor cache, the packet descriptor cache to include
3 pointers to a first portion of the data packets stored in the first and second memory units.

1 23. A machine-readable medium that provides instructions, which when executed by
2 a machine, cause said machine to perform operations comprising:

3 storing a number of sets of static data across more than one memory unit of at
4 least two memory units; and

5 storing a number of sets of dynamic data within a single memory unit, such that a
6 processing unit can read the set of static data from any of the at least two memory units.

1 24. The machine-readable medium of claim 23, wherein the number of sets of the
2 static data includes a forwarding table for data transmission of data packets across a
3 network.

1 25. The machine-readable medium of claim 23, wherein the number of sets of
2 dynamic data includes data packets to be processed by a processing unit within a network
3 element.

1 26. The machine-readable medium of claim 25, wherein a first data packet of the data
2 packets is stored across more than one of the number of sets of dynamic data.

1 27. The machine-readable medium of claim 26, further comprising storing a pointer
2 to a first set of dynamic data of the number of sets of dynamic data that represent the first
3 data packet.

1 28. The machine-readable medium of claim 23, wherein storing the set of static data
2 across more than one memory unit of the at least two memory units includes storing the
3 set of static data across each of the at least two memory units.

1 29. A machine-readable medium that provides instructions, which when executed by
2 a machine, cause said machine to perform operations comprising:

3 storing a set of data across more than one of at least two memory units upon
4 determining that the number of sets of data is static; and
5 storing the set of data within a single memory unit of the at least two memory
6 units upon determining that the set of data is dynamic.

1 30. The machine-readable medium of claim 29, wherein the set of data that is static
2 includes a forwarding table for data transmission of data packets across a network.

1 31. The machine-readable medium of claim 29, wherein the set of data that is
2 dynamic includes data packets to be processed by a processing unit within a network
3 element.

1 32. The machine-readable medium of claim 29, wherein storing the set of data across
2 more than one of at least two memory units upon determining that the number of sets of
3 data is static includes storing the set of data that is static across each of the at least two
4 memory units.

1 33. A machine-readable medium that provides instructions for accessing a set of data
2 from a number of memory units, the instructions when executed by a machine, cause said
3 machine to perform operations comprising:

4 reading the set of data from a single memory unit from the number of memory
5 units, upon determining that the set of data is dynamic; and

6 reading the set of data from any of the number of memory units, upon
7 determining that the set of data is static.

1 34. The machine-readable medium of claim 33, wherein the set of data that is static
2 includes a forwarding table for data transmission of data packets across a network.

1 35. The machine-readable medium of claim 33, wherein the set of data that is
2 dynamic includes data packets to be processed by a processing unit within a network
3 element.

1 36. A machine-readable medium that provides instructions for reading a set of data
2 from a number of memory units, the instructions when executed by a machine, cause said
3 machine to perform operations comprising:

4 reading the set of data from a single memory unit from the number of memory
5 units, upon determining that the set of data is dynamic;

6 upon determining that the set of data is static, performing the following:

7 reading the set of data from a first memory unit from the number of
8 memory units, upon determining that the first memory unit is accessible;
9 reading the set of data from a second memory unit from the number of
10 memory units, upon determining that the first memory unit is not accessible and
11 the second memory unit is accessible;
12 reading the set of data from a third memory unit from the number of
13 memory units, upon determining that the first memory unit and the second
14 memory unit are not accessible and the third memory unit is accessible; and
15 reading the set of data from a fourth memory unit from the number of memory units,
16 upon determining that the first memory unit, the second memory unit and the third
17 memory unit are not accessible and the fourth memory unit is accessible.

1 37. The machine-readable medium of claim 36, wherein the set of data that is static
2 includes a forwarding table for data transmission of data packets across a network.

1 38. The machine-readable medium of claim 36, wherein the set of data that is
2 dynamic includes data packets to be processed by a processing unit within a network
3 element.